



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/550,546

09/26/2005

Satoshi Watanabe

OHK-0010

1926

23353

7590

01/17/2008

RADER FISHMAN & GRAUER PLLC

LION BUILDING

1233 20TH STREET N.W., SUITE 501

WASHINGTON, DC 20036

EXAMINER

BAYOU, AMENE SETEGNE

ART UNIT

PAPER NUMBER

4147

MAIL DATE

DELIVERY MODE

01/17/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/550,546

**Applicant(s)**

WATANABE ET AL.

**Examiner**

AMENE S. BAYOU

**Art Unit**

4147

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1, 3-6 and 9 is/are rejected.  
7) ☒ Claim(s) 2, 7 and 8 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 26 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date 09/26/05, 01/10/07  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Specification**

1. The abstract of the disclosure is objected to because it contains more than 150 words. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b)

### ***Claim Objections***

2. Claim 3 is objected to because of the following informalities: The phrase "said first delivery chamber in said second delivery chamber" is not clear and causes confusion. Based on what is disclosed in the detailed description part of the specification we think the word "in" need to be replaced by "and". For the purpose of the examination of this claim and all the other dependent claims henceforth we understood the phrase as "said first delivery chamber and said second delivery chamber". Correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action.

Art Unit: 4147

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 3,4,5, and 9 as best understood are rejected under 35

U.S.C. 102(b) as being unpatentable over Arai et al. (US patent number 5800147).

5. In re claim 3, Arai et al'147 discloses the claimed invention including:

- A reciprocating compressor (figure 1)
- A cylinder block (1) having formed therein a plurality of cylinders (11), figure 4 and 5.
- Pistons (12) that make reciprocal movement inside cylinders (11), figure 8.
- A first cylinder head (4) fixed to one end of cylinder block (1) via a valve plate (3), figure 8.
- A second cylinder head (6) fixed to another end of cylinder block (2) via a valve plate (5), figure 1.
- A first delivery chamber (24a) formed at first cylinder head (4), into which a working fluid let out from a first compression space formed toward one end inside each of said cylinders is guided, figure 8.
- A second delivery chamber (24b) formed at second cylinder head (6), into which a working fluid let out from a second compression space formed toward another end inside each of said cylinders is guided, figure 8.
- A plurality of delivery passages formed at cylinder block, in figure 7.

- An outlet port located at cylinder block (4) or cylinder head which communicates between one of delivery passages and an external circuit, with other delivery passage that does not communicate with outlet port made to communicate with first delivery chamber (24a) and second delivery chamber (24b) and also made to communicate via a guide passage with said delivery passage in communication with outlet port, in figure 7 and figure 1.
- Other delivery passage is made to communicate with first delivery chamber and second delivery chamber via a constricted portion (3f and 5f) having a relatively small passage section, in figure 7.

6. In re claim 4 Arai et al'147, in figure 7 discloses the claimed invention including:

- The length of the path extending from first delivery chamber to said guide passage and the length of the path extending from said second delivery chamber to said guide passage are set substantially equal to each other

7. In re claim 5 Arai et al'147, in figure 7 discloses the claimed invention including:

- The length of said first delivery chamber (24a) along the axial direction and the length of said delivery chamber (24b) along the axial direction are set substantially equal to each other.

8. In re claim 9 Arai et al'147, in figure 7 discloses the claimed invention including:

Art Unit: 4147

- A constricted portion (5a) formed at outlet port or at a position immediately preceding outlet port

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 1 is rejected under 35 U.S.C 103(a) as being unpatentable over Arai et al'147 in view of Taguchi et al (US patent number 5173032).

11. In re claim 1 Arai et al'147 discussed above discloses:

- A reciprocating compressor (figure 1)
- A cylinder block (1) having formed therein a plurality of cylinders (11), figure 4 and 5.
- Pistons (12) that make reciprocal movement inside cylinders (11), figure 8.
- A first cylinder head (4) fixed to one end of cylinder block (1) via a valve plate (3), figure 8.
- A second cylinder head (6) fixed to another end of cylinder block (2) via a valve plate (5), figure 1.
- A first delivery chamber (24a) formed at first cylinder head (4), into which a working fluid let out from a first compression space formed toward one end inside each of said cylinders is guided, figure 8.

Art Unit: 4147

- A second delivery chamber (24b) formed at second cylinder head (6), into which a working fluid let out from a second compression space formed toward another end inside each of said cylinders is guided, figure 8.
- A plurality of delivery passages formed at cylinder block, in figure 7.
- An outlet port located at cylinder block (4) or said cylinder head which communicates between one of delivery passages and an external circuit, with said other delivery passage that does not communicate with said outlet port made to communicate with said first delivery chamber (24a) and said second delivery chamber (24b) and also made to communicate via a guide passage with said delivery passage in communication with said outlet port, in figure 7 and figure 1.
- Delivery passage in communication with outlet port is made to communicate with at least either first delivery chamber or second delivery chamber via a constricted portion (105a) having a smaller passage section than the passage section at areas where other delivery passage communicates with said first delivery chamber and said second delivery chamber in figure 3

But Arai et al'147 fails to disclose

- The dimensions of said constricted portion are set so as to achieve an area equal to or less than the area of a circular section with a diameter of 1.5 mm.

However Taguchi et al'032 teaches a non clutch compressor having a cylinder (69), a piston (68) and an outlet with a constriction (89 and 90) having :

Art Unit: 4147

- A constricted portion having an area greater than  $.5 \text{ mm}^2$  (diameter of  $.79 \text{ mm}$ ) but less than  $1.8 \text{ mm}^2$  (diameter of  $1.5 \text{ mm}$ ), and is used to restrict the flow rate of the discharged fluid to attain the required resistance which was determined experimentally, in column 5 lines 55-68 and column 6 line 1.

12. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a constriction diameter since selecting the proper orifice diameter to attain increase restricted flow rate is a common knowledge used in the art to restrict the flow rate of the discharged fluid to attain the required resistance as is taught by Taguchi et al'032.

13. Claims 6 as best understood is rejected under 35 U.S.C 103 (a) as being unpatentable over Arai ET al'147

14. In re claim 6 Arai et al'147discussed above discloses all the limitations including

- A constricted portion (5a) formed at a valve plate (5), in figure 9 and column 5, lines 64-66.

***Allowable Subject Matter***

15. Claim 2 dependent on claim1 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



Art Unit: 4147

16. Claim 7 dependent on claim 1 or 3 is objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form

including all of the limitations of the base claim and any intervening claims

17. Claim 8 dependent on claim 1 or 3 is objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form

including all of the limitations of the base claim and any intervening claims

### ***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takenaka et al (US patent number 5533871) discloses a single headed compressor having pulsation damping system. Shibuya (US patent number 4652217) discloses a double acting type compressor. Kishi et al (US patent number 4274813) discloses a swash plate compressor. Shintoku et al (US patent number 6296457B1) discloses a pulsation damping apparatus for compressor. Mizutani et al (US patent number 6149397) discloses a pressure pulsation reducing compressor. Pettitt et al (US patent number 5139392) discloses a multi cylinder swash plate compressor discharge gas flow arrangement.

Art Unit: 4147

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amene S. Bayou whose telephone number is 571-270-3214. The examiner can normally be reached on Monday-Thursday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Nguyen can be reached on 571-272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amene S Bayou  
Examiner  
Art Unit 4147

/George Nguyen/

Supervisory Patent Examiner, Art Unit 4147

/Ninh Nguyen/ Primary Examiner, Art Unit 3745

